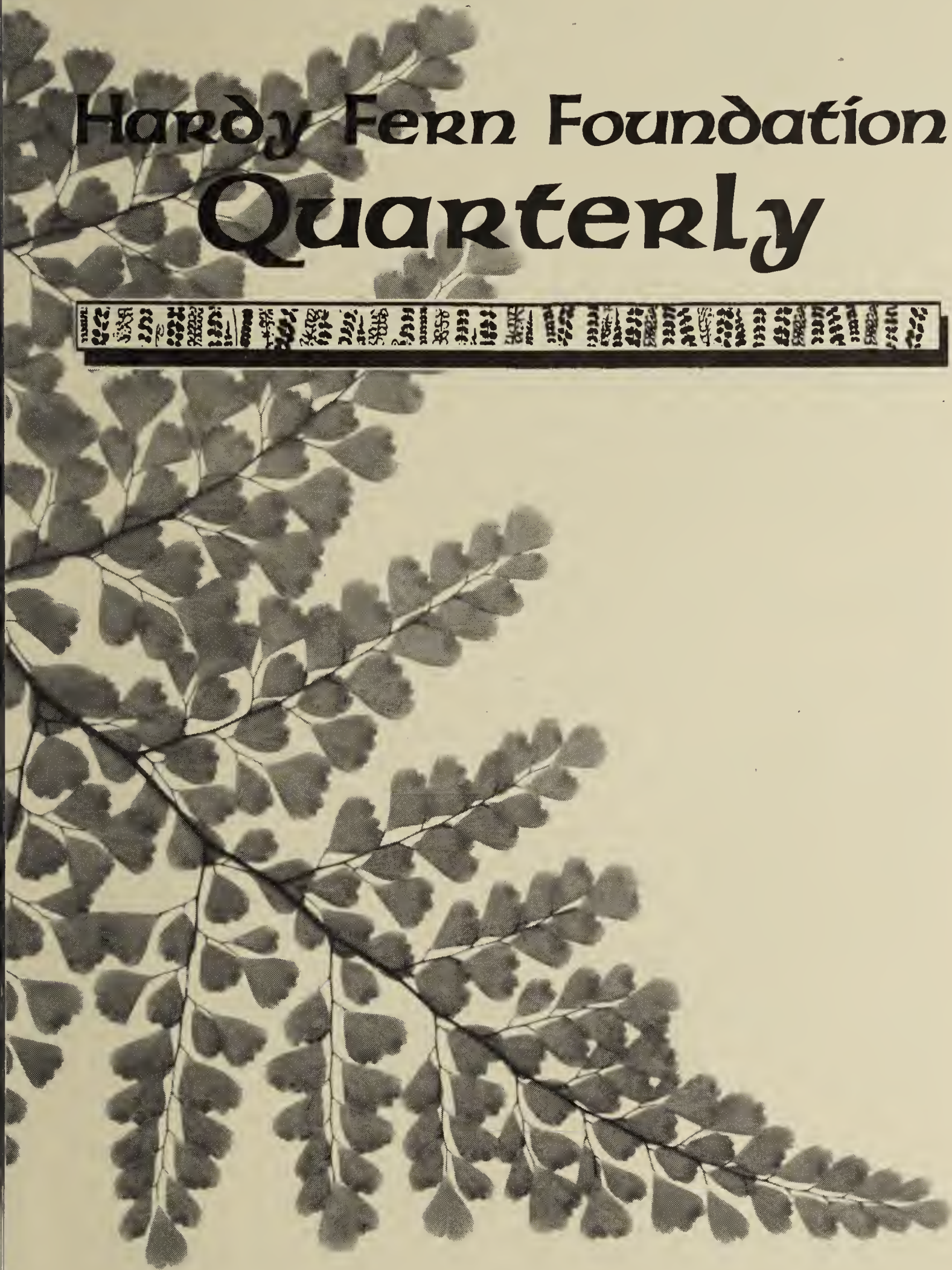
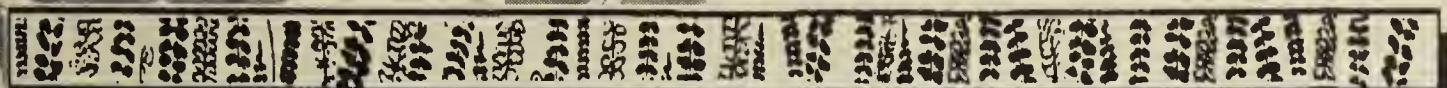


# Hardy Fern Foundation Quarterly





## **THE HARDY FERN FOUNDATION**

P.O. Box 166

Medina, WA 98039-0166

(206) 870-5363

Web site: [www.hardyferns.org](http://www.hardyferns.org)

**The Hardy Fern Foundation** was founded in 1989 to establish a comprehensive collection of the world's hardy ferns for display, testing, evaluation, public education and introduction to the gardening and horticultural community. Many rare and unusual species, hybrids and varieties are being propagated from spores and tested in selected environments for their different degrees of hardiness and ornamental garden value.

The primary fern display and test garden is located at, and in conjunction with, The Rhododendron Species Botanical Garden at the Weyerhaeuser Corporate Headquarters, in Federal Way, Washington.

Satellite fern gardens are at the Stephen Austin Arboretum, Nacogdoches, Texas, Birmingham Botanical Gardens, Birmingham, Alabama, California State University at Sacramento, Sacramento, California, Coastal Maine Botanical Garden, Boothbay, Maine, Dallas Arboretum, Dallas, Texas, Denver Botanic Gardens, Denver, Colorado, Georgeson Botanical Garden, University of Alaska, Fairbanks, Alaska, Harry P. Leu Garden, Orlando, Florida, Inniswood Metro Gardens, Columbus, Ohio, Lewis Ginter Botanical Garden, Richmond, Virginia, New York Botanical Garden, Bronx, New York, and Strybing Arboretum, San Francisco, California.

The fern display gardens are at Bainbridge Island Library, Bainbridge Island, WA, Lakewold, Tacoma, Washington, Les Jardins de Metis, Quebec, Canada, University of Northern Colorado, Greeley, Colorado, and Whitehall Historic Home and Garden, Louisville, KY.

Hardy Fern Foundation members participate in a spore exchange, receive a quarterly newsletter and have first access to ferns as they are ready for distribution.

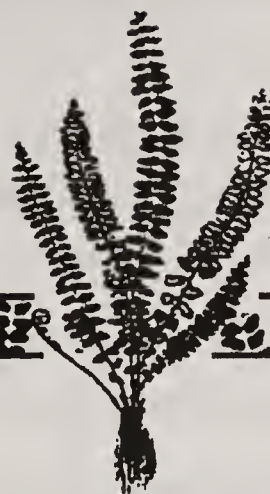
Cover Design by Willanna Bradner

**HARDY FERN FOUNDATION QUARTERLY**

THE HARDY FERN FOUNDATION

QUARTERLY

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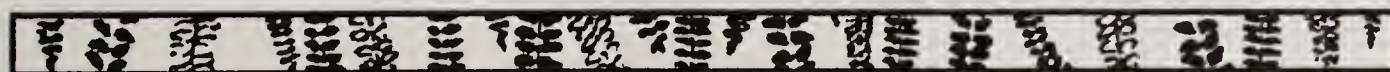


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**The Spore Exchange Needs You**

Please continue to send spores to:

Shannon Toal  
4717 SW Graham Street  
Seattle, WA 98136





## President's Message

Fall is upon us and is a good time to continue to collect our spores and mail them to our spore exchange director Shannon Toal at 4717 SW Graham Street, Seattle, WA 98136.

Thank you for your support and participation in the events of the past year with special thanks to the late John Putnam for his guidance and vision.

The Hardy Fern Foundation Board of Directors assembled at the Bainbridge Island Kitsap County Library for its July 10<sup>th</sup> meeting and for a tour of the Display Garden. One tends to forget what a lovely serene setting this is, with picturesque landscaping and idyllic pathways. The plantings are in good health and growing to maturity. The garden is truly a job well done by John van den Meerendonk.

We also toured a new fern garden in progress at the Poulsbo Public Library an additional project undertaken by John. Here the setting is more open and less confined. This will be another outstanding garden when completed.

On July 14<sup>th</sup> a group of twenty met at the Cle Elum Ranger Station and with the guidance of Dr. Arthur Kruckeberg, embarked on a day tour of the North Fork of the Teanaway River in Washington's Wenatchee Mountains. The group, consisting of Hardy Fern Foundation members and non-member friends and one dog (also not a member), was treated to a rewarding, informative overview of contrasting floras, soils and rock types characteristic in the area. The plant life reflected the extreme variations in the soil, moisture, depth and topographic differences. Many thanks to Dr. Kruckeberg and his wife Mareen Kruckeberg for one of the most interesting field trips to date.

We are looking forward to future activities, replenishing inventory in our hoop house, increased activity with Satellite and Display Gardens an active spore exchange and our plant distribution program should see added activity.

I would like to wish everyone a healthy and happy fall season with a sincere invitation to join us by participating in any way you are able.

Best regards,

Pat Kennar – Bellevue, WA

## **Martin Rickard To Lecture**

---

Martin Rickard will be speaking in the U.S. this fall.

He will lecture on "Ferns We Grow in England" which promises to be an interesting program indeed.

*His schedule is as follows:*

**New York Botanical Garden, Bronx, NY**

*10:00 AM, Saturday, October 27*


**Dallas, Texas site to be determined**

*7:30, November 1*

**Mercer Arboretum, Houston, Texas**

*2:00 Saturday, November 3*

*For further and up to date  
information on  
the lectures in Texas contact  
Roger Hughes at  
[rphughes@cox-internet.com](mailto:rphughes@cox-internet.com)*



**THE HARDY FERN FOUNDATION**  
**QUARTERLY**

*The Hardy Fern Foundation Quarterly is published quarterly by the Hardy Fern Foundation, P.O. Box 166, Medina, WA 98039-0166.*

Articles, photos, fern and gardening questions, letters to the editor, and other contributions are welcomed!

Please send your submissions to  
Sue Olsen  
2003 128th Ave SE,  
Bellevue, WA, 98005.

**Newsletter:**

**Editor:** Sue Olsen  
**Assistants:** Michelle Bundy  
**Graphics:** Willanna Bradner (cover design)  
Karie Hess (inside design)



## American Fern Society Fern Foray 2001 – New Mexico, August 11 – 12

Sue Hollis

Kansas City, MO

It's almost 8:30 on a Saturday morning and we're on the road at last, rounded up and headed out by our fearless leaders, Mike Windham and George Yatskievych. A couple of dozen in two mini-buses are heading to the Magdalena Mountains about two hours south of Albuquerque. The trip was planned to include some time in the Manzano Mountains but heavy rains have washed out the roads so we will concentrate on the Magdelanas. Of course, the early monsoons have brought the ferns into perfect condition and the temperatures to very pleasant lower eighties.

Our first stop was at the mouth of Water Canyon in the Cibola National Forest at elevations of 6500 to 7500 ft. As we disembarked, we noticed that the clouds had started to build over the nearby mountain tops. We started up a small side canyon where trees include alligator juniper, *Pinus ponderosa*, walnut, *Quercus grison* and *Q. gambioli*, and pinon pine (*Pinus edulis*). There is far more rock and igneous schist than vegetation. After considerable climbing, in one fairly small area we found *Woodsia neomexicana*, *Cheilanthes eatonii*, *Argyrochosma fendleri*, *Notholaena standleyi*, *Astrolepis windhamii* and *A. sinuata*. After much photographing and use of hand lens, we climbed and scooted back down.

Next, we got back on the mini busses and went farther up the canyon. We're riding rather than walking because of the impending rain. When the road got too rough for the busses, we walked on and found *Selaginella underwoodii* on a granite dike. Apparently, it is limited to granite in this area. It was sporing and we were able to see the spores. Nearby, we also found another *Woodsia*, *W. plummerae*. At this point the rains started, slowly at first, and we headed for the buses.

During lunch, the rain became a serious downpour and the less-than-watertight picnic shelter became an island with water all around. When the waters started to cover our island, we made it out by high stepping through the rain on clumps of grass. This ended our visit to the mountains and we headed for drier country. We drove out of the rain as soon as we left the mountains. The busses pulled off the road in a desert area to let us flap in the wind and dry out while our leaders determined alternate locations.

The decision was to head for the Valley of Fire. At our next stop, on the east side of Chupadera Mesa on limestone outcroppings right beside US Highway 380, we found a different group of ferns. These included *Astrolepis cochisensis*, possibly subspecies *chihuahuensis*, *Cheilanthes feei*, *Pellaea intermedia*, and *P. atropurpurea*.

Further along Highway 380, we stopped at the Carizozo Lava Flow in the Valley of Fire BLM Recreation Area. The lava is geologically recent and was fun to walk on, with large smooth areas crossed by cracks and edges quite jagged. It seemed that almost every plant that grew in the lava beds had thorns of some sort. Although the

*Cheilanthes feei*



habitat was most interesting, we found only two ferns, *Notholaena standleyi* and *Cheilanthes feei*. They were growing down in the cracks, far enough to get moisture but not too far to get sunlight.

After a more scenic route back to Albuquerque that included several looks at Pronghorn Antelope, we arrived tired and late, complete with cacti and barbed wire scars. It was a lovely day.

Sunday saw 22 of us on a tour bus headed for the Sandias Mountains, just northeast of Albuquerque. Here we hiked some distance through desert on the Foothills Trail System in Embudito Canyon at about 6230 feet in altitude. Hikers, runners, and bikers heavily use the trails. Vegetation was mostly shrubby, including staghorn cholla, prickly pear, bristle bush, and rabbit brush. Eventually we went up an arm of the canyon and began climbing on rocks. The path was a little treacherous at times, spiked with various cactus and Poison Ivy, but we still managed to find *Cheilanthes eatonii*, *C. feei*, *C. fendleri*, *Argyrochosma fendleri*, *Woodsia neomexicana*, *Pellaea truncata*, *Selaginella underwoodii*, *Woodsia oregana* ssp *cathcartiana* and what appeared to be a hybrid between *W. oregana* ssp *cathcartiana* and *W. neomexicana*.

All the ferns we found were small, xerophytic plants, often very leathery and with hairs to protect them from the heat. They grow in the cracks near the bottoms of large boulders where there is a small seep to sustain them through the dry season. Many of them turn brown and curl up, appearing dead, or shed their fronds, growing new ones when the rain comes.

We were back in town early enough for a bit of sightseeing. Thanks to Mike and George (and the monsoons), the annual Fern Foray was a great success.

## Welcome New Members

---

Jean H. Anderson

Mike Breiding

Steven Brown

Dinah Campi

Michael T. Dorsey

Gary Greenbaum

Sarah M. Hathaway

John M. Howard

David Kester

Pat Linton

Ana Miller

Myron Royce Farms

Vitro Plus

John and Phyllis Randall

Helen Scholtz

Elizabeth Stuart

William Vandermay

Imelda & Don VanFleet

Dr. Kevin C. Vaughn



# The AFS Preforay Trip 2001

Robin Halley, San Diego Fern Society



*Cheilanthes tomentosa*

Sometimes getting there IS more than half the fun. This year's excursion on the way to the annual American Fern Society (AFS) fern forays was proof.

The 2001 AFS forays were in the desert mountains around Albuquerque, New Mexico. Shortly after the forays were announced, I got my first (expected) phone call from my friend David Schwartz, who lives in Bakersfield, California. To say that the desert ferns (xerics) excite David is an understatement. His e-mail address, after all, is [xericferns@aol.com](mailto:xericferns@aol.com). So, even though the forays were not until August, David was looking for a commitment to a preforay trip from San Diego through Arizona and New Mexico.

After a couple of months of negotiation, David and I decided to leave on Wednesday, August 8, and spend Wednesday, Thursday, and Friday looking at ferns on our way to Albuquerque. As the trip plans solidified, the travel team grew by two more members, David's teenage son Michael and another fern enthusiast, Phillip Hammond, from San Francisco.

I rate myself a serious hobbyist when it comes to ferns. However, David and Phillip are really serious hobbyists. David has focused his energies on the ferns that live in harsh and arid conditions and knows those, especially the ones in the Southwest, very well. Phillip is more of a generalist, but is probably the best educated in terms of fern morphology. Phillip's idea of a good vacation is to visit a herbarium somewhere in the world and help them clean up their specimen collection. As a result, Phillip is very knowledgeable about ferns' shape, size, and spore pattern.

David, Michael, and Phillip planned to leave Bakersfield about 7 PM Tuesday night for the four-hour drive to San Diego and stay overnight in preparation for an early departure Wednesday. The fates conspired against the weary band of travelers and they finally arrived at about 2AM for an overnight stay at Chez Halley.

At 8 AM Wednesday, David could wait no longer and we pushed off to the East in the rental car acquired for the trip. Today's goal was Douglas, Arizona, down near the Arizona-New Mexico-Mexico border. We made good time across the California and Arizona deserts to just outside of Tucson, Arizona, where David's lack of familiarity with the gas gauge led to a small miscalculation and we sputtered to the side of the freeway out of gas and no gas stations in sight. This was where my cell phone and AAA card came in handy and less than 40 minutes later we were back on our way.

We immediately noticed how green Arizona was. For those who don't know, parts of Arizona and New Mexico get a regular summer "monsoon" delivered by winds blowing up from the Mexican tropics. This year the monsoon rains had been particularly



heavy, and none of us could remember seeing Arizona this green, even during the winter.

As we traveled, we discussed possible exploration spots. Our intended first stop was Rucker canyon, north of Douglas in the Chiricauhua Mountains. However, during the trip, Phillip and David got excited about a spot in the Huachuca Mountains, called Garden Canyon, which boasted at least 15 species of xeric ferns. The only problem was that Garden Canyon is about five miles inside the Fort Huachuca army base in the Huachuca Mountain range. We had no idea how accessible this would be.

About 5:30 PM we pulled into Sierra Vista, Arizona, outside the army base. Sierra Vista sits at about 4600 feet altitude, with the Huachuca Mountains behind it towering to over 9000 feet.

There were still about two hours of sunlight left. We decided to investigate access to Garden Canyon. We drove into the base main gate and pulled into the permit office parking lot. Inside the building I asked the guard about access to Garden Canyon.

"Birders?," he asked. "No, ferners," I said. "You need a pass for how many days?," was the next question. "Two," I replied. The guard made out the pass and in we went.

Garden Canyon is about five miles inside the gate and we cruised up a two-lane road that goes from paved to dirt after about four miles. The light was fading. The sun was down behind the nearby mountains tops. But, such is the fever that burns in the hearts of the true xeric fern nut that we eagerly watched out the window as the rocky landscape went by. Here and there we picked out spots to which to return later, but the goal was to quickly find a good spot from which to comb the light underbrush.

We reached a nice little campground and decided to push on just a little more. About a quarter mile further we spotted a likely limestone hillside, pulled over, and piled out. Pausing just long enough to pull on our backpacks, we started a census of the hillside inhabitants. *Bommeria hispida* [Copper Fern] was the first find and then the little star, *Argyrochosma limitanea* ssp. *limitanea* [Border Cloak Fern]. All the *Argyrochosma* are cute. They have delicate-looking stems and tiny pinnules. In addition, the ones in Arizona and New Mexico also have a blue-green tint to the foliage. Next, David spotted *Pellaea atropurpurea* [Purple Cliff Brake] and then Phillip identified *P. intermedia* [Intermediate Cliff Brake]. This was a lifetime first sighting of this fern for us. Another lifetime first came next, *Cheilanthes villosa* [Villous Lip Fern]. This is a beaded *Cheilanthes*, dark green and very scaly on the back. Finding a couple of forms of *Cheilanthes eatonii* [Eaton's Lip Fern] of slightly different color and shape started a discussion about this fern's variability and how it closely resembles *Cheilanthes tomentosa* [Woolly Lip Fern]. A few more minutes hunting and we had spotted *Astrolepis cochisensis* ssp. *cochisensis* [Cochise's Cloak Fern], *A. integerrima* [Hybrid Cloak Fern], *A. windhamii* [Windham's Cloak Fern], and *A. sinuata* [Wavy Cloak Fern].

After another 20 minutes in the brush looking at all the same ferns, Michael Schwartz and I headed down hill along a little stream that followed the road, sometimes at the road edge and sometimes 20-30 yards away. We were looking for *Asplenium resiliens*

*continued on page 76*

## AFS Preforay Trip continued from page 75

[Black Stem Spleenwort] and also making our way down to one of the rocky ledges we spotted on our drive up the hill.

As we walked through the campground, Michael balanced his way across a little dam crossing the stream. "Yipe," he said, jumping onto the bank on the far side. "I almost stepped on a rattlesnake." I pulled out my headlamp and shone it where he pointed. Indeed, there was not just one but two rattlesnakes. This appeared to be a pair that had been drinking at the stream. They couldn't get into the underbrush fast enough.

We made our way down the hill to the rocky ledges. We clambered up the rocks for a look at *Cheilanthes lindheimeri* [Fairy Swords], more *Bommeria hispida*, and *Cheilanthes feei* [Slender Lip Fern]. David and Phillip pulled up in the car and spent the last few minutes of usable light scrambling around on the rocky ledges and added *Cheilanthes wootonii* [Beaded Lip Fern] to the evening's list.

That night we found a nice hotel room, had a late dinner, and crawled into bed for an early Thursday AM start. Thursday dawned and we hit the road about 7:30AM to return to Garden Canyon for a better look. We even ate breakfast in the car to give us more time. The day was nice, with a curtain of high clouds to help keep down the temperatures.

We drove further into the canyon to the actual head of the Garden Canyon trail. The bird watching enthusiasts had beaten us there, with some birders already coming off the trail at 8AM. We decided to start today's search on a natural rock amphitheater facing the canyon entrance. We had to cross the creek, keeping a careful eye out for poison ivy, to reach the rocks. As we scrambled up the three hundred foot high hillside, we got a nearly instant reward of *Notholaena aschenborniana* [Aschenborn's Cloak Fern]. None of us had seen this fern in the wild before. There were lots of *Astrolepis* here, a lot of *Cheilanthes feei*, and another new fern for this location, the very pretty *Cheilanthes bonariensis* [Golden Cloak Fern, Bonaire Lip Fern] with its mat of blond hairs on the frond backside.

After about two hours on the hill, we moved over to the trail up through Garden Canyon. The canyon itself is quite pretty, with a wealth of live oaks, Manzanita, and wild flowers. The bees were busy, but our careful search was only turning up more of the same ferns. We spent nearly another two hours enjoying a pretty day, looking for ferns, and watching for birds, squirrels, and lizards. As we were about to give up the search, Phillip appeared from up the trail with fronds from two more new finds, *Cheilanthes alabamensis* [Alabama Lip Fern] and *Asplenium resiliens*. *A. resiliens* is common in the American southeast, where I had seen it in Georgia, but just sneaks into the lower right-hand corner of Arizona. *C. alabamensis* has just about the same distribution, more common throughout the southeast and just making it into Arizona. This was the first time any of us had seen *C. alabamensis* in the wild.

At noon we hit the road knowing our next destination, Rucker Canyon. To get there we traveled through Bisbee, Arizona, once better known as a copper mining town but now growing famous as an artists' colony and tourist stop, and Douglas, Arizona, famous for bird watching and for being Arizona's gateway to Mexico. From Douglas,



we headed up along the Arizona-New Mexico border, past the non-existent town of Apache, to Rucker Canyon Road and five miles of bad road to get to Rucker Canyon.

We reached the Rucker canyon shortly before 3PM, luckily driving between a couple of major monsoon downpours. The little streambed at the entrance to Rucker Canyon that was dry our previous trip was nearly a foot deep with runoff water. We have a favorite spot at the canyon entrance where we had spotted about six species of ferns.

We parked the car by a sign for the Coronado National Forest. Michael and I walked back down the road while David and Phillip foraged the nearby underbrush. David and Phillip uncovered *Pellaea wrightiana* [Wright's Cliff Brake], *P. truncata* [Spiny Cliff Brake], and *Bommeria hispida*. At the same time, exploring a wonderful geometric rock face, Michael and I spotted myriad plants of *Notholaena standleyi* [Standley's Cloak Fern] tucked into the rocks and, among the boulders at the foot of the cliff face, *Cheilanthes lindheimeri* and a couple different *Astrolepis* species...*A. sinuata* and *A. integerrima*. It's still amazing how green it was. There were a variety of pretty wildflowers punctuating the roadside and underbrush.

After an hour, we moved up the canyon to another spot known from a previous trip, specifically in search of *Cheilanthes arizonica* [Arizona Lip Fern]. Here, the terrain is a mixture of grassy fields, short scrub underbrush, and open forest. On an exposed hillside in rocky sandy soil we saw lots more patches of *Bommeria hispida* and also spotted *Astrolepis cochisensis*, *Cheilanthes yavapensis* [Yavapai Lip Fern], and *Cheilanthes wrightii* [Wright's Lip Fern]. A little further down the road we found *Woodsia phillipsii* [Phillips's Cliff Fern] and, at the bottom of streambed heavily shaded by large old live oaks, we found large colonies of *Cheilanthes fendleri* [Fendler's Lip Fern]. *Cheilanthes arizonica* escaped our best efforts...this time.

As darkness overtook Rucker canyon, we drove out in the direction of New Mexico, looking for a likely spot for the night. We needed to get about another 100 miles down the road to make the trip to David's mom's house outside Albuquerque a morning ride the next day. At approximately the right spot along I-10, we arrived at Lordsburg. This was apparently a booming town at some point, but not now. We did find a nice inexpensive motel and some good Mexican food to end our day.

The morning of the third day started with us on the road again around 8 AM. Our first destination was Las Cruces for breakfast and then straight up Highway 25 to Lani Schwartz's place in Bosque, New Mexico, about 45 miles south of Albuquerque. With no appreciable stops for ferns, we arrived there before 2 PM. After a quick stop to greet Lani and a couple of cats and a dog, unload luggage, and have a cool drink, we were off to Albuquerque to get Phillip settled into his hostel accommodations and to make a final quick fern trip up the La Luz Trail in the Sandia Mountains, north of Albuquerque.

The day was sunny but enjoyable, with temperatures in the low 80s. The first thing we saw at the trailhead was a posting to be on the lookout for bears. La Luz trail is very well kept and is an easy hike. However, the xeric fern hunters hardly ever stick to the trail as they are sure the really best fern is hiding behind a rock about twenty feet above the trail. The vegetation in this area is definitely more xeric than our

*continued on page 78*

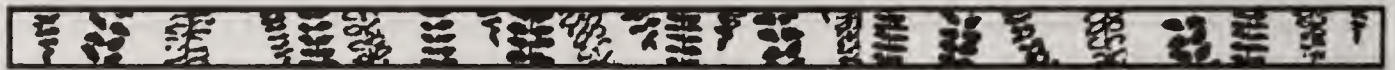


## AFS Preforay Trip continued from page 77

previous hike areas, with Cholla and Opuntia cactus quite prevalent. The underbrush is quite sparse even in this rainy monsoon season, but there are ferns to be found. Within 100 yards of the trailhead we found two "Fendleri" ferns. The first was *Cheilanthes fendleri*, but the second was another life first for me, *Argyrochosma fendleri* [Fendler's Cloak Fern]. This is another small, delicate, blue-green fern growing most often in the cracks between rocks.

Rather than walk the switchbacks, the four of us scrambled straight up the hill for a while, encountering more *A. fendleri* as well as *Cheilanthes eatoni* and *Pellaea truncata*. After climbing, scrambling, and investigating for about a half hour, we found a side trail to a little shaded canyon. There we found good-sized colonies of *Selaginella underwoodii* (Underwood's Spike Moss) mixed in with *Cheilanthes eatoni*, a couple of *Woodsia neomexicana* (New Mexico Cliff Fern), and some pretty little salmon-colored *Silenes*.

Before giving up for the day, we spent another hour wandering the hills, enjoying the flora and each other's company, and watching for bears. It was a great three days. We know that the American Fern Society forays of the next two days will be anticlimactic fern wise, with only one new *Woodsia* and a different *Astrolepis* variety to anticipate, but we are looking forward to spending quality time with old fern friends, making new ones, and perhaps infecting a couple more of the unsuspecting with a passion for xeric ferns. David is already planning the next trip...



### *Osmunda claytoniana* Interrupted Fern - Clayton's Fern

James R. Horrocks - Salt Lake City, Utah

This rather interesting species was discovered in Virginia by John Clayton in the early 1700's and was named Clayton's Fern by Linnaeus himself. The much more descriptive name "Interrupted" fern is in reference to the positioning of the contracted fertile pinnae partway up the frond, interrupting the rows of sterile pinnae. This species is known mainly from Northeastern North America, but a variety "pilosa" is recognized in northern and eastern Asia. The Asian Interrupted fern has fertile and sterile fronds of equal length while in North American plants, the fertile fronds are taller. *Osmunda claytoniana* hybridizes with *O. regalis* var. *spectabilis* to form *O. ruggii* Tryon, an extremely rare hybrid known only from one locality in Connecticut and one in Virginia. Since the two parent species are commonly found growing together, it is a mystery as to why the hybrid is indeed so rare.

*Osmunda claytoniana* is terrestrial in wooded areas and on hummocks in swamps, usually in well-drained subacid soils. It often shows a preference for rock piles, open stony fields and pastures.



*Osmunda claytoniana*



To quote Herbert Durand: "The Interrupted Fern frequently wanders down a wooded slope nearly to the edge of a swamp, where the Royal and Cinnamon ferns are reveling in the placid water, but it never shows any disposition to join them and get its feet actually wet." The Interrupted fern is quite common in the American northeast and can be found in abundance in some locales. The author has personally seen literally acres of this fern in the woodland preserve at Coot's Paradise near Hamilton, Ontario, Canada. The stately plants were five feet tall and clumps numbered in the hundreds. This fern is often confused with the Cinnamon fern *O. cinnamomea*, but the fronds have more of a bluish cast and the pinnules are rounded rather than half-crescent shaped as in *O. cinnamomea*.

**Description:** The rhizome is stout and creeping, with a protruding crown and an abundance of wiry roots. The stipes are yellowish to occasionally pinkish, often half the length of the frond, with reddish-brown woolly hairs that are deciduous. At maturity the stipe is glabrous. The entire frond can be from two to five feet in length, the sterile fronds arranged in a circular pattern and held outward more so than the erect fertile fronds that grow straight up and then tip outward beginning just above the contracted fertile pinnae. This gives the fern a "double-decker" look which is quite unique. The fronds are technically once pinnate-pinnatifid, with oblong-lanceolate pinnae that are deeply cut into relatively broad segments and displaying bilateral symmetry. The pinnae are truncate at the base and acute at the apex. The rachis has sparse hairs and there are no dense tufts of hairs at the pinnae bases. The fertile fronds are dimorphic with the curious contracted fertile pinnae interrupting the sterile pinnae above and below. The fertile pinnae may number 1 to 5 pairs and are somewhat tri-pinnate. They are largely made up of clusters of sporangia which are at first blackish-green, then becoming dark brown, and finally withering after the spores are released. The spores are green and short-lived.

**Culture:** This is a truly magnificent fern when well established. It grows in low to medium light conditions, preferring a subacid organic soil that is kept moist but not necessarily boggy. It is less demanding about acidity and water requirements than either *O. cinnamomea* or *O. regalis*. There is some variation within this species. Wherry notes that varieties have been found with "pinnae divided into long, lobed pinnules" and also with "pinnae tending to be short, triangular, and irregularly cut in a frilly pattern." This species needs a cold winter dormancy period and tends to do poorly in the southern part of the United States. In the north, large established plants make an impressive background for smaller ferns. Wherry calls it "an especially good subject for the woodland garden."

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*Fern Growers Manual* (revised), Barbara Joe Hoshizaki and Robbin Moran, Timber Press, Portland, (2001).



## Cle Elum Fern Foray

Richie Steffen - Federal Way, WA

Cle Elum is a small town in eastern Washington at the foothills of the Wenatchee Mountains. In mid-July nineteen members and friends of the Hardy Fern Foundation traveled to Cle Elum to explore the unique flora in the mountains above. We were fortunate to have Dr. Arthur Kruckeberg, a well-known naturalist of the Pacific Northwest, as our tour guide. Meeting at the Cle Elum ranger



L-R *Aspidotis densa* (fertile and infertile fronds)  
*Polystichum imbricans*, *Polystichum lemmonii*,  
*Cryptogramma crisa* (fertile and infertile fronds)  
*Cheilanthes gracillima*. Photo by Richie Steffen.

station, we headed up the north fork of the Teanaway River.

This area is noted for having several rare ferns and unusual plants growing on serpentine soil. Serpentine soil's a rare soil type that occurs in a few locations in the Pacific Northwest. They are typically shallow soils that are low in calcium and high in magnesium, chromium, and nickel. The plants found growing in this harsh condition are typically stunted in growth.

After a short drive we came to a gravel road that lead to our first stop at Beverly campground. Along side of the road we found two of the ferns we were looking for, *Aspidotis densa* and *Polystichum scopulinum*. *Aspidotis densa*, Indian's Dream, is a small clumping fern reaching about 6 inches tall. The dark green fertile fronds are upright and leathery with a relatively fine texture. The non-fertile fronds surrounded these and were already yellowing and drying up for their summer dormancy. Interspersed with the *Aspidotis* were *Polystichum scopulinum*, Western Holly Fern. This is a fertile hybrid of *Polystichum imbricans* and *P. lemmonii*. The pinnate-pinnatifid fronds were very upright and narrow growing to about 12 to 14 inches tall. Both of these ferns grew on steep gravelly road cuts in a sunny location. Most of the plants grew from the base of a large rock, but a few mavericks were out in the open virtually unprotected from the elements

We got back into the cars and continued up the road. Our next stop was near the Du Roux trailhead. We hiked a short distance from the road and encountered a lush and green wet meadow. The meadow consisted of a shallow layer of rich, wet, organic soil on a solid bed of rock. This narrow strip of moisture created a heaven for several wonderful plants. The thick moss was dotted with patches of brilliant rose-pink paintbrush, *Castilleja miniata* and the delicate thin white spires of the Dilated Bog Orchid, *Platanthera dilatata*. We found the unusual serpentine form of *Adiantum aleuticum*,



the Western Maidenhair Fern. This form differs in that the pinnae stand straight up on top of the glossy black stipes with each leaflet stacked on top of the other like a Venetian blind. I also found it remarkable that this dainty form grew primarily in the full sun. The east side of the Cascade Mountains can be quite hot, and it was surprising that these plants were growing untouched by the heat. We continued to explore the area then returned to the vehicles to the next stop.

We parked at the Esmeralda Basin trailhead a few miles up the road from the meadow. The trail followed along a rushing creek through a Douglas Fir and Ponderosa Pine forest. Near the trailhead a few of us found single plants of *Polystichum imbricans* and *Polystichum lemmonii*. Both grew almost side-by-side sprouting from cracks in the rocks. *Polystichum imbricans*, the Dwarf Western Sword Fern has a similar look to its big brother, but each leaflet is overlapping the other giving a stacked appearance. This small plant was in almost full sun, which seemed to enhance the overlapping effect. *Polystichum lemmonii*, the Shasta Holly Fern, was only 6 inches tall with narrow, lance-shaped, bipinnate-pinnatifid fronds. Also growing in full sun it had an attractive fine texture.

Spurred on by this find we followed Dr. Kruckeberg up the trail. During the short hike up we found several wild flowers including *Pyrolas*, columbines, and an odd penstemon relative called *Nothochelone*. Our destination was a rock out cropping surrounded by Douglas Fir. On the rocks were a few small colonies of *Cheilanthes gracillima*, the Lace Lip Fern. These small ferns were wedged in cracks and crevices of the stone mixed with sedums and *Lewisia columbiana* var. *rupicola*. The *Lewisia* was displaying the last of its small pale pink flowers. The Lace Lip Fern has fine bipinnate fronds with dense cinnamon colored hair on the underside. This contrasted well with the dull dark green surface and dark brown wiry stipes. We took a little time to relax and enjoy the sunny weather. By the time we finished it was mid-afternoon so we began our trip back.



*Polystichum scopulinum*.  
Photo by Richie Steffen

As we drove back down the rough gravel roads we made a final stop near Eldorado Creek. Following the creek we found the typical form of *Adiantum aleuticum*. Although, this fern is common in our area it is one of the most beautiful. This delicate species forms clumps about 12 to 18 inches tall with thin arching black stipes topped with its bright green leaflet radiating out like a small umbrella.

We slowly worked our way back to the cars and packed up for the trip back home. Leaving the foothills of the Wenatchee Mountains and making our way over to the west side of the Cascades, we finished a successful trip and a beautiful day above Cle Elum.



*Martin Rickard is the past President of the British Pteridological Society, formerly edited their publication the "Pteridologist", is the author of many articles as well as The Plantfinder's Guide to Garden Ferns and is the owner of Rickard's Hardy Fern Nursery in Tenbury Wells, England.*

***Fern Grower's Manual*, Barbara Joe Hoshizaki and Robbin Moran, 604 pp., 2001, Timber Press.**

*Martin Rickard - Reviewer*

In 1976 I purchased the first edition of this book after hearing enthusiastic reviews from Jimmy Dyce. I found it useful, but to be honest I was a little disappointed, principally because fewer than 400 species were described. Descriptions were usually brief and the relatively few illustrations were mostly in black and white.

In its new guise the book is now difficult to recognize, even though it does rejoice under the same title. The original author, Barbara Joe Hoshizaki, has not wasted the intervening quarter of a century and the input of Robbin Moran as an additional author has lifted the book to new heights. Significantly we now have full descriptions and illustrations of about 700 species and many cultivars. The illustrations are still predominantly black and white, and to be honest not particularly attractive, but they are technically informative.

Introductory chapters tell the gardener everything he needs to know about the biology of ferns, growing ferns, and controlling their pests and diseases. The A-Z is the central part of the book describing hardy and non-hardy ferns in cultivation in the United States. The inclusion of so many non-hardy species rarely, if ever, covered in other fern books makes this work particularly valuable. Any enthusiast for tropical-effect gardening or warm temperate ferns, as well as staff at any major botanical garden will all find this book indispensable.

Readers may notice the author's tendency to split genera well known in horticulture, into more numerous, but arguably technically correct genera. This is apparently a matter of opinion, certainly the authors usually discuss any controversial names, but I do think it is unfortunate that names cannot be more stable. The correctness or otherwise of this practice is not too important to most growers, but when *Cheilanthes sensu lato* is spread through A-Z under *Argyrochosma*, *Aspidotis*, *Astrolepis*, *Cheilanthes*, *Mildella* and *Notholaena* it makes the book difficult to use. I had the same problem with the cyatheoid tree-ferns, these are split into *Alsophila* and *Sphaeropteris* as well as *Cyathea*. Of course nothing is ever simple and as gardeners I suspect we are all guilty of following naming concepts going back to our own individual backgrounds. For example I have become used to splitting *Oreopteris* from *Thelypteris* and using *Oreopteris limbosperma* as opposed to the *Thelypteris limbosperma* promoted here! On the subject of name changes I must mention the dreaded '*Asplenium trichomanes-ramosum*' which raises its ugly head again here. Why can we not stick to the neat and appropriate name - *Asplenium viride*? Linnaeus was wrong when he described the original plant as a branched form of *A. trichomanes* - why cannot such mistakes be rectified?



The choice of taxa included in this book deserves some discussion. Most genera are very well covered. For example *Adiantum* (39 species), *Davallia* (22 species) *Dryopteris* (49 species) and *Polypodium sensu lato* (c. 89 species) - all have been subjects of special publications by Barbara Joe Hoshizaki. Curiously the most recent of these publications, on *Dryopteris* in the **American Fern Journal**, Vol. 89, 1-100 (1999), is not included in the extensive bibliography - perhaps an indication that this book was a long time in press? A few other genera can seem thinly represented by comparison, such as the tree-ferns (17 species including *Dicksonia* and *Cibotium*) and *Asplenium* where only 11 species hardy to zone 8 are included. Overall there is a strong emphasis on warm temperate and tropical species, no doubt reflecting what is grown in California. Given this bias I am still amazed at the lack of tree-ferns included here - presumably they are not in cultivation, all the more amazing considering the Californian climate and the proximity of the extremely rich Mexican flora.

Where appropriate cultivars are included. Coverage of cultivars of hardy species are probably better given elsewhere but the inclusion of tender cultivars in a wide range of genera provides a very useful source of information in one place.

Within the book proper many very interesting issues are discussed. Looking through this book to review I have learned a great deal, much of the material included here is not available elsewhere unless perhaps it lurks in obscure publications. The coverage of *Platyserium* was an eye-opener, more species are given here than in Hennipman and Roos's 1982 monograph!

Inevitably there are times when I do not agree with the authors. *Blechnum* is a good case in point. Use of *Blechnum capense* for the New Zealand fern seems out of date to me, I presume *B. novaezealandiae* is the fern in question. More significantly I cannot understand the treatment of *Blechnum cordatum*. The authors say that *B. chilense*, *B. magellanicum* and *B. tabulare* should be sunk into this one single species. In my experience *B. tabulare* is a non-hardy trunk forming fern from South Africa, while *B. chilense* is a totally different creeping species which can occasionally form short upright rhizomes giving the appearance of trunks of 2 or 3 inches in height. I have never seen *B. magellanicum* but my Chilean friends are adamant that it is a very different species forming a true trunk, which I hope might prove hardy here in England.

Although perhaps of little relevance to HFF members I must admit the descriptions of *Dicksonia sellowiana* and *D. berteriana* and their great similarity are food for thought. My plants of these species differ markedly from each other, making me wonder if my plants of *D. sellowiana* from SE Brazil are different from those from the main part of the species range in the American tropics. Certainly *D. sellowiana* in cultivation in Australia differs from my material.

I have never succeeded in growing any species of *Botrychium* for more than a year or two. The inclusion of several species here, as in other US fern books, makes me wonder what am I doing wrong! Are these plants really grown successfully? Here in England I know of no one ever succeeding long term in their culture. If I ever feel like getting lucky the coverage of *Botrychium* given here will be a good starting point!

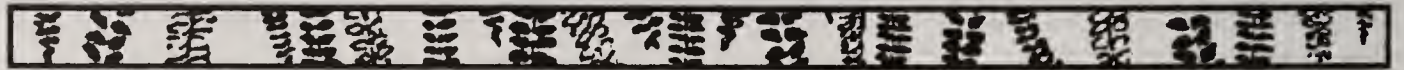
Inevitably this manual will be compared with the *Fern Encyclopedia* by David Jones

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## Book Review continued from page 83

(1987) as both books give extensive coverage to the more tender ferns in cultivation. In short I think the Manual is the more comprehensive book but it lacks the glossy appeal of the Encyclopedia. Both of these books are excellent in their way, but for the grower of hardy ferns, I suspect there are other books which will continue to be more useful, notably John Mickel's excellent **Ferns for American Gardens**.

In Summary, despite the few really rather minor criticisms outlined above, I am certainly not disappointed with this new version. It is a scholarly work which adds significantly to the published books on fern horticulture, particularly of tender and half hardy ferns.



## 2001 - 2002 SPORE EXCHANGE

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Adiantum venustum			'00	3	RSF
Arachniodes simplicior	variegata		'01	15	Bundy
Arachniodes standishii			'00	7	Swell
Aspidotis densa		WA	'01	4	Olsen
Asplenium foreziense			'00	3	Zdenek
Asplenium trichomanes			'01	4	Olsen
Asplenium trichomanes			'99	3	SCD



Asplenium trichomanes		'01	1	Steffen
Athyrium filix-femina x niponicum pictum		'99	5	McGill
Athyrium filix-femina	Rubellum	'00	2	McGill
Athyrium niponicum		'00	4	Olsen
Athyrium niponicum		'99	9	McGill
Athyrium niponicum	Pictum tall form	'99	4	Olsen
Athyrium niponicum	Pictum	'99	4	RSF
Athyrium otophorum		'01	11	RSF
Blechnum cordatum		'00	4	RSF
Blechnum penna-marina		'00	9	Horder
Blechnum penna-marina		'01	9	Steffen
Blechnum spicant	Crispum	'01	4	Olsen
Blechnum spicant	Serratum group	'01	4	Olsen
Blechnum wattsii		'00	4	RSF
Blechnum spicant	WA	'99	3	Olsen
Ceterach officinarum		'01	1	Horder
Ceterach officinarum		'01	1	SCD
Cheilanthes intertexta		'99	15	Swartz
Cryptogramma crispa		'01	5	Bundy
Cryptogramma crispa		'??	6	Horder
Cyrtomium caryotideum		'01	3	Bundy
Cyrtomium falcatum		'99	4	McGill
Cyrtomium lonchitoides		'01	3	Bundy
Cyrtomium macrophyllum		'01	10	Bundy
Diplazium pycnocarpon		'00	3	McGill
Doodia media		'01	6	Bundy
Dryopteris aemula		'00	2	Zdenek
Dryopteris celsa		'00	11	RSF
Dryopteris crassirhizoma		'01	4	Bundy
Dryopteris cystolepidota		'00	9	RSF
Dryopteris dilatata	Jimmy Dyce	'00	3	SCD
Dryopteris dilatata	Stansfieldii	'01	4	Olsen
Dryopteris erythrosora		'00	15	RSF
Dryopteris formosana		'01	4	Bundy
Dryopteris lepidopoda		'01	4	Olsen
Dryopteris ludoviciana		'00	4	McGill
Dryopteris ludoviciana		'01	21	Sue Mandeville

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## Spore Exchange continued from page 85

Genus species	var. or cv.	Wild coll.	Year	# avail.	Donor
<i>Dryopteris namegatae</i>			'01	4	Olsen
<i>Dryopteris pacifica</i>			'01	11	Bundy
<i>Dryopteris remota</i>			'00	15	RSF
<i>Dryopteris sacrosancta</i>			'00	7	McGill
<i>Dryopteris scottii</i>			'01	4	Olsen
<i>Dryopteris sieboldii</i>			'01	12	Bundy
<i>Dryopteris sieboldii</i>			'00	10	RSF, SCD
<i>Dryopteris sublacera</i>			'01	4	Olsen
<i>Dryopteris tokyoensis</i>			'01	4	Bundy
<i>Dryopteris wallichiana</i>			'01	15	Bundy
<i>Gymnocarpium oyamense</i>			'00	4	SCD
<i>Lemmaphyllum macrophyllum</i>			'01	1	Horder
<i>Llavea cordifolia</i>			'00	9	Swartz
<i>Pellaea brewerii</i>			'99	3	Swartz
<i>Pellaea cordifolia</i>			'??	15	Swartz
<i>Pellaea viridis</i>			'00	3	McGill
<i>Phyllitis scolopendrium</i>			'01	8	Bundy
<i>Polypodium scoleri</i>			'01	8	Bundy
<i>Polypodium vulgare</i> 'Cornubiense'			'01	1	Steffen
<i>Polystichum braunii</i>			'99	3	RSF
<i>Polystichum dudleyi</i>		CA	'99	3	Damgaard
<i>Polystichum lobatum</i>			'??	7	Gassner
<i>Polystichum makinoi</i>			'01	4	Olsen
<i>Polystichum neolobatum</i>			'01	5	Bundy
<i>Polystichum neolobatum</i>			'01	4	Olsen
<i>Polystichum setiferum</i>			'00	7	RSF
<i>Polystichum setiferum</i> cv. lacy, not crested			'01	4	Olsen
<i>Polystichum tsus-simense</i>			'00	10	Horder
<i>Thelypteris decursive-pinnata</i>			'00	3	McGill
<i>Thelypteris palustris</i>		NY	'00	4	Schott
<i>Woodsia fragilis</i>			'01	4	Olsen
<i>Woodsia intermedia</i>			'01	8	Bundy
<i>Woodsia obtusa</i>			'00	3	RSF
<i>Woodsia polystichoides</i>			'01	1	Horder
<i>Woodwardia fimbriata</i>			'01	5	Bundy



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**The Fern Trail at the Mohonk Mountain House,  
Mohonk Lake, New Paltz, NY**

*Catharine W. Guiles - New Gloucester, ME*

“If you are the kind of gardener who wants a fairly self-maintaining area, not too formal and with a long season of interest, the fern trail, or fern garden, is for you.” These words introduce the article, “Making a Fern Trail,” by Ruth H. Smiley, published in 1969 in the *Handbook on Ferns*, one in the series of booklets Plants & Gardens put out by the Brooklyn Botanic Garden. This handbook is no longer in print, having been replaced in 1994 by the BBG’s publication *Ferns: Wild Things Make a Comeback in the Garden*. Nevertheless, I have found the 1969 booklet very helpful in suggesting topics for articles in this quarterly. Many years ago, glancing at the table of contents, the name “Smiley” jumped out because I knew, even before I turned to the article, that this would be about a garden at one of my favorite vacation spots, the Mohonk Mountain House at Mohonk Lake, near New Paltz, New York.

There are two ways to approach this article: through a description of two trails emphasizing ferns at Mohonk or through a broad description of this resort and its founders and continuing owners, the Smiley family. Although the first one is the



*A view of the lawn at Mohonk, with the hotel in the background and one of the resort’s distinctive gazebos in the foreground. The Fern and Wildflower Trail is in the woodland to the right. Photo by Catharine Guiles.*

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## **The Fern Trail at the Mohonk Mountain House**

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obvious choice, to omit the second would leave out important history behind the two features within Mohonk's extensive gardens. Bear with me, therefore, while I set the scene and describe some of the history of Mohonk.

The Mohonk Mountain House is located 90 miles north of New York City in the midst of the Shawangunk Mountains, a low range east of the Catskills, whose highest summit reaches 2,289 ft. The resort hotel overlooks a small lake of the same name. When, in 1869, Alfred Smiley and, later, his twin brother Albert—Quaker teachers and school administrators from Providence, R.I.—visited this lake, the latter envisioned it as the perfect site for a vacation home. The two bought a debt-ridden inn and tavern on the location, and, to finance the planned summer retreat, upgraded and reopened the establishment as a boarding house for those seeking relief from the cities' summer heat. The atmosphere and activities of the tavern were banished in favor of recreations offered by the beautiful location and the company of guests—many of them family friends—who shared the aesthetic, intellectual, and ethical values nourished by the Smileys' background. Among these values was the stewardship of nature.

Today, 132 years later, some things have not changed. The Smileys—the fourth generation—are still in charge, and the same philosophy rules. Some families, like my own, make a point of introducing each new generation to this peaceful retreat. Other things have changed: the ten-room inn is now a 273-room year-round resort known for its eclectic Victorian architecture and 100-plus rustic gazebos that are found in its gardens and on its trails and carriage roads. It has extensive recreational and sports facilities and is the focal point of a 24,000-acre preserve. In the decades before World War I, the Smileys made it a center for forward-looking conferences on the conditions of the Native Americans and of Blacks, and on International Arbitration, and it still hosts meetings of many types, most notably for those associated with the United Nations. In 1986, the hotel and grounds were placed on the Register of National Historic Landmarks.

Gardens have always held an important place at Mohonk, especially for founder Albert Smiley. The visitor's first impression is of vivid color provided by beds of annuals. Adjacent to them is a long pergola covered with vines and bordered on each side by perennials. Nearby, there is a rose garden, fenced to protect it from deer, as well as a recent innovation: a maze constructed of conical evergreens. The grounds also serve as an arboretum, with enormous and ancient trees. I recall playing, at the age of nine, with my six-year-old brother beneath the huge branches of a beech tree. Such giants are still there. The greenhouses also beckon the visitor, and surrounding the hotel, there are beautiful border plantings and creative groupings of plants in containers.

### **The Fern and Wildflower Garden**

Ruth Happel Smiley, born in 1910 and still alive, first came to Mohonk as a guest, in 1936. Three years later, she married one of the founders' great-nephews





*A view of Mohonk's Fern and Wildflower Trail, August 2001.*

*Photo by Catharine Guiles.*

(whom she met on one of Mohonk's famous caving expeditions). With her Cornell bachelor's and master's degrees in botany, horticulture, and landscaping, she became an advisor on Mohonk's gardens and the organizer of the annual "Mohonk Garden Holiday," a week of programs on all aspects of gardening which continues to this day. Having an interest in ferns and wildflowers, it was natural that she would want to add a fern and wildflower garden to Mohonk's grounds.

Writing about this effort, which began in 1965, in the mentioned Brooklyn Botanic Garden publication, she noted:

"When we created our fern garden here at Lake Mohonk, N.Y., a few seasons ago, we widened our brook at one place to make a little pool, encouraged the six or eight kinds of ferns already growing in the area, and added others until now more than 25 well-established varieties are to be found, labeled along our fern trail." She describes laying out a trail, using gravel or, preferably, wood chips for its surface. She adds, "A garden, no matter how small, needs to be contemplated, and a rustic seat of logs or stone will help your 'fern watching.'" After discussing soil improvement through leaf mold and the choice of plants—all local—she dwells on the special environments required by certain species, e.g., a wet area for the royal fern and ledges for spleenworts; and the advisability of including wildflowers in this garden. She ends her article: "By all means visit nature preserves or sanctuaries, wildflower gardens and botanic gardens in your area; they are sure to yield inspiration and ideas."

I was fortunate in having the garden's caretaker, Anna Forster, as my guide for my August 2001 visit. She mentioned some points that helped me understand the appearance of the garden today. First, the garden was always intended as a display area for species of the Shawangunk Mountains environment. Second, in deference to Mrs. Smiley's wishes, the garden has been kept "natural." This means that there has apparently been no watering and little maintenance beyond keeping the stream culverts open and some weeding; for better or worse, the beautiful but aggressive White snakeroot is flourishing there. Ferns that once grew in the garden but have died out have apparently not been replaced. Third, there has been a severe drought in the northeast this year; many ferns have become dormant. Fourth, the deer population at Mohonk has been a great challenge to the garden staff. This is also a vexing problem for gardeners in many areas, and it is particularly intractable for those who stand by Albert Schweitzer's dictum "Reverence for life." I have never heard of deer browsing on ferns, yet, the Lady and Royal ferns certainly looked chewed up and they had even attacked Bracken! Finally, Mrs. Forster said that the garden staff has been stretched

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## The Fern Trail at Mohonk Mountain House continued from page 89

thin, and it is understandable that they would put their energies into maintaining the colorful display gardens which are so popular with Mohonk's guests.

Yet the news was not all bad. A patch of Common polypody was thriving in the crevice of a rock; I know from experience that this is a very difficult species to transplant and maintain. Also, there were large stands of Interrupted, Cinnamon, and Ostrich ferns. The reader should see Appendix 1 for a list of ferns that now grow in the garden.

Very helpfully, Mrs. Forster gave me a copy of a 1992 map of the garden, in Mrs. Smiley's handwriting. The ferns and wildflowers that grew there at that time, as well as those which Mrs. Smiley noted had died out, are also listed in Appendix 1. When a change of policy or reallocation of resources takes place, the garden staff will have this map from which to work in restoring the garden.

If the fern garden so hopefully described in the *Handbook on Ferns* has seen better days, another trail at Mohonk offers ferns that are doing much better. This is the Bruin Path Nature Trail, and there is a trail guide, written by Mrs. Smiley in 1977 and updated in 1999. Along this trail, one can see ferns growing naturally. In this guide, the author especially points out particularly the Common polypody growing on rock ledges, Marginal wood ferns, and Hayscented ferns.

I believe that if I had visited Mohonk in June, the fern garden would have looked very different. Both the ferns and spring wildflowers would likely have been at their best. As the resort is a place that draws one back again and again, it is not impossible that a future pleasure awaits me there.

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**Appendix 1.** Ferns found in various years at the Mohonk Fern and Wildflower Trail. This list is supplemented with species found in the Northern Shawangunk Mountains, Ulster County, NY, but never, apparently, included in the garden.

**Bold face:** Ferns growing in the garden in 2001. All are native,

**Plain type:** Ferns found in the garden in the past, with dates.

All are native, except as noted.

**Italic type and indented:** Other ferns native to the Shawangunk Mountains.

*Adiantum pedatum* (Northern maidenhair)

*Asplenium montanum* (Mountain spleenwort - 1971)

*Asplenium platyneuron* (Ebony spleenwort - 1971)

*Asplenium rhizophyllum* (Walking fern - 1971)

*Asplenium trichomanes* (Maidenhair spleenwort - 1971)

*Athyrium thelypteroides* (Silvery glade fern)

*Athyrium filix-femina* subsp. *angustum* (Lady fern)

*Botrichium dissectum* (Cut-leaf grape fern)

*Botrichium matricariifolium* (Daisy-leaved grape-fern)

*Botrichium multifidum* (Leathery grape-fern)

*Botrichium virginianum* (Rattlesnake fern - 1971, 1992, 1998)

*Cystopteris bulbifera* (Bulblet bladder-fern 1971)

*Cystopteris fragilis* (Fragile fern - 1971)

*Dennstaedtia punctilobula* (Hayscented fern)

*Dryopteris clintoniana* (Clinton's wood fern)

*Dryopteris carthusiana* (Toothed wood fern; Spinulose wood fern - 1971)

*Dryopteris cristata* (Crested wood fern - 1971)

*Dryopteris filix-mas* (Male fern - 1971, not native)

*Dryopteris goldiana* (**Goldie's Wood fern, not native**)

*Dryopteris intermedia* (**Evergreen wood fern**)

*Dryopteris marginalis* (**Marginal wood fern**)

*Equisetum* sp. (1992)

*Gymnocarpium dryopteris* (Oak fern - 1971)

*continued on page 92*

## The Fern Trail at Mohonk Mountain House continued from page 91

*Lygodium palmatum* (Hartford fern - 1971, not native)

*Matteuccia pennsylvanica* (**Ostrich fern**)

*Onoclea sensibilis* (**Sensitive fern**)

*Osmunda cinnamomea* (**Cinnamon fern**)

*Osmunda claytoniana* (**Interrupted fern**)

*Osmunda regalis* (**Royal fern**)

*Polypodium virginianum* (**Common polypody**)

*Polystichum acrostichoides* (**Christmas fern**)

*Pteridium aquilinum* (**Bracken**)

*Thelypteris palustris* (Marsh fern - 1971, 1992)

*Thelypteris hexagonoptera* (Broad beech fern - 1971)

*Thelypteris phegopteris* (Northern beech fern - 1971)

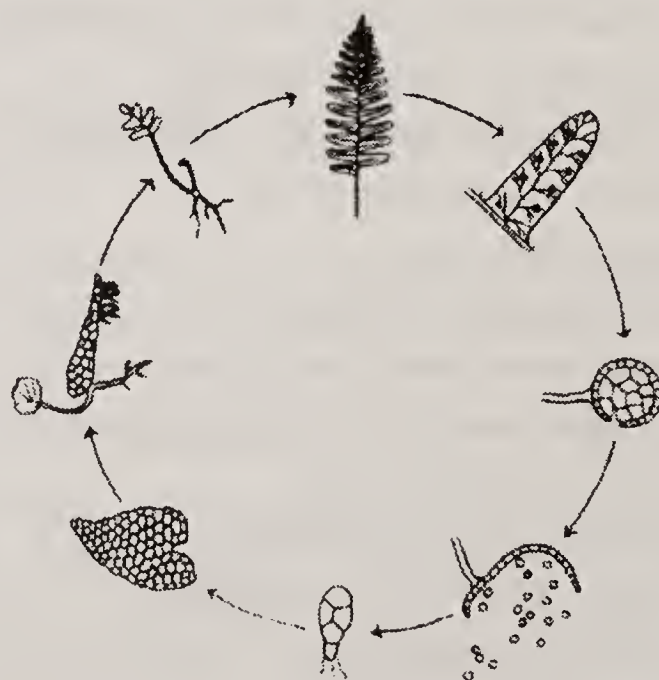
*Thelypteris simulata* (Massachusetts fern - absence mentioned in 1992)

*Thelypteris noveboracensis* (**New York fern**)

*Woodsia ilvensis* (Rusty woodsia)

*Woodsia obtusa* (Blunt-lobed woodsia - 1971)

*Woodwardia virginica* (Virginia chain fern - 1971)





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